

IN THE CLAIMS:

The status of each claim that has been introduced in the above-referenced application is identified in the ensuing listing of the claims. This listing of the claims replaces all previously submitted claims listings.

1. (Previously Presented) A method for forming a contact interface, comprising:
providing a substrate including semiconductor material with at least one contact comprising semiconductor material protruding from the substrate;
forming a layer comprising dielectric material over the semiconductor material and the at least one contact;
forming a layer comprising silicon over the layer comprising dielectric material;
forming another layer comprising dielectric material over the layer comprising silicon;
forming a layer comprising barrier material over the another layer comprising dielectric material;
exposing a selected region of the layer comprising silicon through the layer comprising barrier material and the another layer comprising dielectric material;
forming a layer comprising electrically conductive silicidable material over the layer comprising barrier material and in contact with an exposed region of the layer comprising silicon; and
annealing the silicon and the electrically conductive silicidable material to form a silicide contact.

2. (Previously presented) The method of claim 1, wherein forming the layer comprising dielectric material comprises forming silicon dioxide.

3-5. (Canceled)

6. (Previously Presented) The method of claim 1, wherein forming the layer comprising barrier material comprises forming a layer comprising at least one of titanium nitride, tungsten nitride, tungsten silicon nitride, and titanium silicon nitride.

7. (Canceled)

8. (Previously Presented) The method of claim 1, wherein forming the layer comprising dielectric material comprises depositing TEOS.
9. (Previously Presented) The method of claim 1, wherein forming the another layer comprising dielectric material comprises depositing silicon dioxide.
10. (Canceled)
11. (Previously Presented) The method of claim 1, wherein forming the layer comprising electrically conductive silicidable material comprises forming a layer comprising cobalt.
12. (Canceled)
13. (Previously Presented) The method of claim 1, wherein annealing is effected by heating at least the silicon to a temperature of about 400°C. to about 800°C.
14. (Previously Presented) The method of claim 1, wherein annealing is effected by heating at least the silicon to a temperature of about 450°C. to about 600°C.
15. (Previously presented) The method of claim 13, further comprising removing an unreacted portion of the electrically conductive silicidable material.
16. (Previously presented) The method of claim 15, wherein removing the unreacted portion is effected without substantially removing reacted electrically conductive silicidable material.
17. (Previously presented) The method of claim 28, wherein removing the unreacted portion is effected without substantially removing the barrier material.

18. (Previously presented) The method of claim 15, wherein removing the unreacted portion is effected with a hydrochloric/peroxide mixture solution.

19. (Canceled)

20. (Canceled)

21. (Previously Presented) The method of claim 1, further including removing the layer comprising barrier material after forming the silicide contact.

22. (Previously presented) The method of claim 21, wherein removing the layer comprising barrier material is effected without substantially removing the silicide contact.

23. (Previously presented) The method of claim 22, wherein removing the layer comprising barrier material is effected without substantially removing the layer comprising dielectric material.

24. (Previously presented) The method of claim 21, wherein removing the layer comprising barrier material comprises substantially completely removing the barrier material.

25. (Previously presented) The method of claim 21, wherein removing is effected with an ammonia/peroxide mixture solution.

26. (Previously Presented) The method of claim 1, wherein forming the layer comprising barrier material comprises preventing the electrically conductive silicidable material from reacting with the semiconductor material through at least one of a void and an imperfection in the layer comprising dielectric material.

27. (Canceled)

28. (Previously Presented) The method of claim 1, further comprising removing an unreacted portion of the electrically conductive silicidable material.

29. (Previously Presented) A method for forming a contact interface, comprising: providing a substrate including semiconductor material with at least one contact comprising semiconductor material protruding from the substrate, the at least one contact being configured to be received by a recess of a contact pad of a semiconductor device; forming a layer comprising dielectric material over the at least one contact; and forming a silicide contact over the layer comprising dielectric material and over at least a portion of a lateral surface of the at least one contact.

30. (Previously Presented) The method of claim 29, wherein forming the silicide contact comprises: forming a layer comprising silicon over the layer comprising dielectric material; forming a layer comprising electrically conductive silicidable material over the layer comprising silicon; and annealing the silicon and the electrically conductive silicidable material.

31. (Previously Presented) The method of claim 30, wherein forming the silicide contact further comprises: forming another layer comprising dielectric material over the layer comprising silicon, prior to forming the layer comprising electrically conductive silicidable material.

32. (Previously Presented) The method of claim 31, wherein forming the silicide contact further comprises: exposing a portion of the layer comprising silicon through the another layer comprising dielectric material.

33. (Previously Presented) The method of claim 31, wherein forming the silicide contact further comprises:

forming a layer comprising barrier material over the another layer comprising dielectric material, prior to forming the layer comprising electrically conductive silicidable material.

34. (Previously Presented) The method of claim 33, wherein forming the silicide contact further comprises:

exposing a portion of the layer comprising silicon through the layer comprising barrier material and the another layer comprising dielectric material.

35. (Currently Amended) The method of claim 33, wherein forming the layer comprising barrier material comprises preventing the electrically conductive silicidable material from reacting with the silicon through at least one of a void and an imperfection in the another layer comprising dielectric material mateiral.